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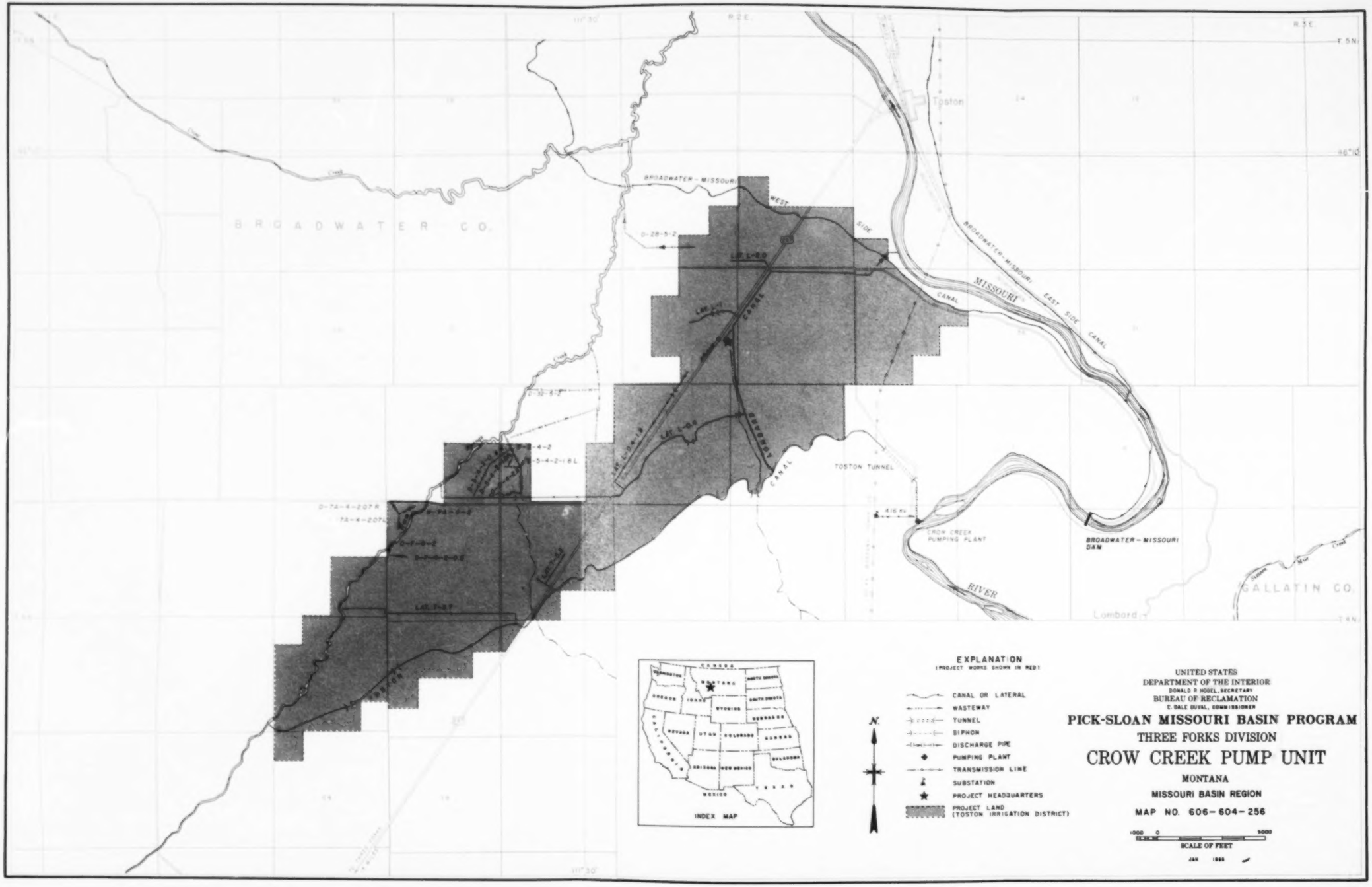
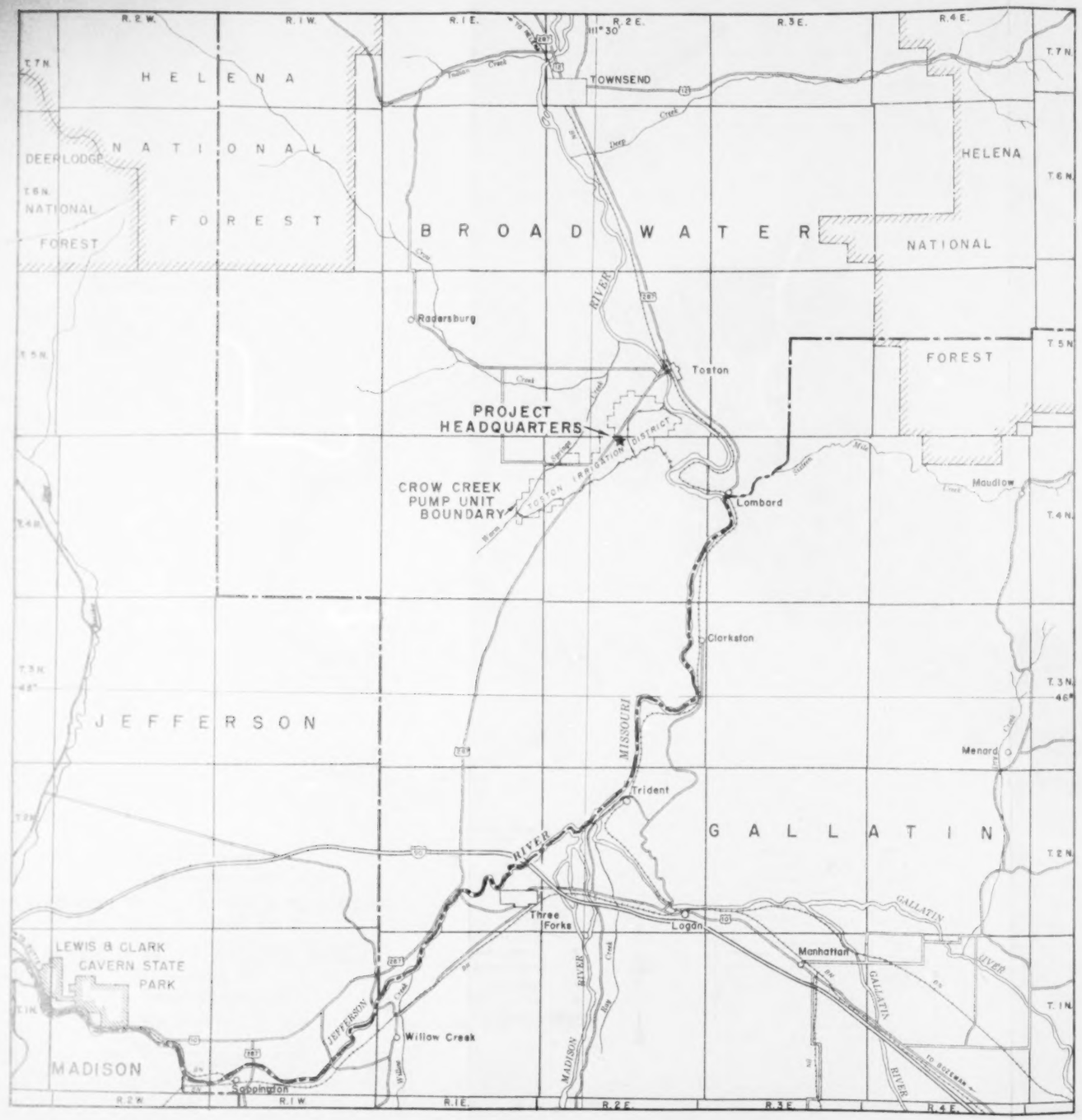

R.2E.
R.3E.
T.5N.
46°10'
BROADWATER CO.
Toston
BROADWATER-MISSOURI
WEST SIDE
MISSOURI
EAST SIDE CANAL
CANAL
LAT. L-0.0
LAT. L-0.5
SUPERWAY
TOSTON TUNNEL
4.16 Mi.
CROW CREEK PUMPING PLANT
BROADWATER-MISSOURI DAM
RIVER
GALLATIN CO.
Lombard
T.4N.
111°30'
INDEX MAP
EXPLANATION
(PROJECT WORKS SHOWN IN RED)
CANAL OR LATERAL
WASTEWAY
TUNNEL
SIPHON
DISCHARGE PIPE
PUMPING PLANT
TRANSMISSION LINE
SUBSTATION
PROJECT HEADQUARTERS
PROJECT LAND (TOSTON IRRIGATION DISTRICT)
N.
UNITED STATES
DEPARTMENT OF THE INTERIOR
DONALD P HODEL, SECRETARY
BUREAU OF RECLAMATION
C. DALE DUVAL, COMMISSIONER
PICK-SLOAN MISSOURI BASIN PROGRAM
THREE FORKS DIVISION
CROW CREEK PUMP UNIT
MONTANA
MISSOURI BASIN REGION
MAP NO. 606-604-256
1000 0 2000
SCALE OF FEET
JAN 1988

I 27.7/4:



WATER SUPPLY

The Crow Creek Pump Unit receives its water supply by pumping from the Missouri River. The drainage area above the pump site is 14,400 square miles and has an average annual runoff of 3,320,000 acre-feet; thus, no regulatory storage is required for the unit. River water surface at the pumps is controlled to a minimum depth of 5 feet by the State-constructed Broadwater-Missouri Diversion Dam, about 1.8 miles downstream. No water shortages could occur as long as the dam remains in place. Return flows enter Warm Springs Creek, a Missouri River tributary.

FEATURES OF THE UNIT

The unit was constructed in 1953-54 to replace an equivalent acreage of irrigated land inundated by Canyon Ferry Lake above elevation 3766. The unit is located in Broadwater County. Unit works are Crow Creek Pumping Plant, Toston Tunnel, Lombard Canal, a lateral and drain system, and operating headquarters.

Crow Creek Pumping Plant. This indoor pumping plant is on the left (west) bank of the Missouri River about 6 miles upstream from Toston, Montana. Each of three 33.3-cubic-foot-per-second pumps is driven by a 900-horsepower synchronous motor operating at 4,160 volts against a total dynamic head of 180 feet. Energy for the plant is obtained from a substation and a 0.4-mile-long distribution line using power generated at Canyon Ferry and wheeled over a Montana Power Company 100-kv. transmission line. The plant is unattended. The 52-inch-diameter steel discharge line mounted on concrete anchors is about 946 feet long and terminates in a 120-foot-long, 6½- by 6-foot concrete-covered conduit at the Toston Tunnel entrance. An air core reactor was installed in the plant in 1963 to protect the pump motors against power surges.

Toston Tunnel and Canal. The 6.5-foot concrete-lined horseshoe-shaped Toston Tunnel has a design capacity of 100 cubic feet per second. It is 2,044 feet long. The outlet transition is 15 feet long and connects with Toston Canal which has a length of 7.8 miles and is unlined. Numerous cross drainage and operating structures are provided. Initial and terminal design capacities of the canal are 100 and 35 cubic feet per second, respectively.

Lombard Canal. The Lombard Canal diverts water from the Toston Canal about 1.5 miles from the tunnel to irrigate lands in the northern section of the unit. The Lombard Canal is 2.9 miles long, unlined, and has initial and terminal capacities of 60 and 20 cubic feet per second, respectively. Twenty-two drop structures, as well as numerous operating structures, are used in the canal.

Lateral and Drainage System. The lateral system has a total length of 10.1 miles with capacity to irrigate 4,510 acres. The drainage system is 6 miles in length.

OPERATION OF THE UNIT

The unit is operated by the Toston Irrigation District. Water pumped from the Missouri River is applied by gravity to the individual farm units.

IRRIGABLE AREA OF THE UNIT

The Crow Creek Pump Unit consists of 5,018 acres of full irrigation service lands located southwest of Toston, Montana.

CHARACTER OF SOIL IN IRRIGABLE AREAS

The surface soils are generally light to medium textured with variable subsoils. The predominant surface soil types are sandy loams and loams.

ALTITUDE OF IRRIGABLE AREA

The elevation of the irrigable area varies from 4,120 [illegible] feet above mean sea level.

IRRIGATION REQUIREMENT

The net consumptive use of irrigation water has been estimated at 1.25 acre-feet per acre annually. The average annual farm delivery for the period 1955-1961 was 2.25 acre-feet per acre. The irrigation of 5,018 acres will require an average annual diversion of 16,800 acre-feet at a maximum rate of 100 cubic feet per second.

LENGTH OF OPERATING SEASON

The operating season is from May through September.

CLIMATOLOGICAL DATA

The average annual precipitation as recorded at Townsend, Montana, from 1926-1984 was 11.11 inches with an average of 8.17 inches falling from April to October. Average annual temperature, 1936-1984 was 44.0°F with a May-September average of 59.8°F. The average frost-free period was 106 days from 1950 to 1962.

PRINCIPAL PRODUCTS

Alfalfa, barley, oats, wheat, potatoes, and tame pasture are the principal crops.

PRINCIPAL MARKETS

Alfalfa is sold locally or shipped to outside markets as alfalfa meal. Small grains, potatoes, and livestock are marketed locally in Bozeman, Butte, and Helena, with some shipments to larger cities outside the State. The Northern Pacific Railway and U.S. Interstate 90 provide convenient access to mid-Western and West Coast markets.

For additional information address inquiries to:

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MAY 27 1986
U.S. GOVT. PUBLICATIONS
DEPOSITORY 376

☆ U.S. GOVERNMENT PRINTING OFFICE: 1986—677-971